REMARKS

The Office Action dated January 24, 2006, has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 19 and 29 have been amended. No new matter has been added, and no new issues are raised which require further consideration and/or search. Claims 1-39 are submitted for consideration.

Claims 9-13, 1-18, 21-28 and 33-39 were objected to as being based upon a rejected base claim but would be allowable if rewritten in independent form. Applicant wishes to thank the Examiner for indicating the allowability of claims 9-13, 1-18, 21-28 and 33-39. However, based on the reasons outlined below, Applicant requests that each of claims 9-13, 1-18, 21-28 and 33-39 be allowed in the present form.

Claims 1-8, 14, 19-20 and 29-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,798,743 to Ma et al. The rejection is traversed as being based on a reference that neither teaches nor suggests the novel combination of features clearly recited in independent claims 1, 19 and 29.

Claim 1, upon which claims 2-18 depend, recites a cable modem termination system that includes a media access controller and at least one physical layer transceiver in connection with said media access controller for receiving and transmitting data. The system also includes a CPU interface configured to communicate with a CPU and a

network functions module in communication with said media access controller and said CPU interface. The network functions module includes an upstream flow module for providing quality of service for upstream packet flows, a bridging and routing module for performing bridging of packets to a downstream flow module and for routing the packets to and from a bus and the downstream flow module for providing quality of service for incoming packet flows and for wrapping outgoing packets. The downstream flow module includes a rule module. The network functions module is configured to conduct flow management and classification functions upon packets traveling through said media access controller. The downstream flow module determines whether or not to wrap outgoing packets with control information

Claim 19, upon which claims 20-28 depend, recites a network functions module. The network functions module includes at least one flow module and at least one memory in communication with the at least one flow module. The network functions module also includes a bridging and routing module in communication with the at least one flow module and the at least one memory. The bridging and routing module performs bridging of packets to a downstream flow module and routes the packets to and from a bus. The bridging and routing module includes at least memory means for receiving a packet pointer for a packet selected from one of a plurality of sources. The network functions module is configured to implement flow control and quality of service functions on packets in a network. The downstream flow module determines whether or not to wrap outgoing packets with control information

Claim 29, upon which claims 30-39 depend, recites a method for processing including the steps of receiving a packet in a media access controller and transmitting the packet to a network functions module. The method also includes providing quality of service for upstream packet flows in an upstream flow module and performing bridging of the packet to a downstream flow module and routing the packet to and from a bus in a bridging and routing module. The method further includes the steps of implementing flow management and classification functions on the packet, wrapping an outgoing packet in a downstream flow module, based on a determination of whether or not to wrap outgoing packets with control information and forwarding the packet to an appropriate destination.

As will be discussed below, the cited prior art reference of Ma fails to disclose or suggest the elements of claims 1, 19 and 29.

As presented in a previous response, Ma discloses a packet preprocessing and prioritization technique to significantly reduce end-to-end processing delay associated with routing high priority packets. Figure 8 shows a router in which the preprocessing and prioritization technique may be implemented. The router includes multiple input interfaces that may have one or more queued packets, each of which may have a different QOS priority level. When the packet enters the router, it is dequeued from the input interface and decapsulated by a decapsulation block 802 and classified by block 804 to determine the priority level. The router also includes an intermediate structure for storing non-delay sensitive packets. As such, the router separates overall packet processing into

a preprocessing phase during which delay sensitive packets are fully processed and non delay sensitive packets are stored in the intermediate structure and an intermediate queue processing phase during which intermediate packets are retrieved and processed. Col. 9, line 16-Col. 10, line 67. Hence, preprocessing/phase 1 includes decapsulation and classification to identify the associated priority level of each processed packet to determine whether or not the packet is delay sensitive. Col. 11, lines 10-16.

Ma further teaches that if the packet is determined to be delay sensitive, the packet is immediately and fully processed sufficiently to be routed to at least one output interface queue. Full processing may includes forwarding information (FIB) lookup, QoS processing and/or encapsulation and routing the fully processed packet to an appropriate output interface queue within data structure 810. Once all input interfaces have been checked for packets to preprocess, the router switches to phase II where intermediate packets are fully processed. Col. 11, lines 43-49 and Col. 14, lines 52-65. During full processing of the packet, the appropriate output interface is determined at block 808. The packet is then encapsulated and routed to the output interface queue 810. Col. 14, lines 52-65. According to Ma et al. some of the processing events, such as checksumming, packet classification or visitation of access list may be performed in phase 1 instead of phase II. Figure 8C shows an embodiment where FIB lookup and access list verification occur during phase II processing. Figure 8D shows an embodiment where access list verification occurs during phase I processing. Ma et al. further teaches that phase I should be as simple as possible to enable the packet

forwarding engine to quickly determine whether or not the packet is delay sensitive. Col. 14, line 59- Col. 15, line 11.

Applicant submits that Ma fails to disclose or suggest the claimed features in each of claims 1, 19 and 29. Claims 1 and 29, in part, recites an upstream flow module for providing quality of service for upstream packet flows. The Office Action alleges that modules 802 and 804 of Ma are equivalent to the upstream module recited in clams 1 and 29. However, as noted above, Ma only teaches that modules 802 and 804 perform decapsulation and classification. As previously submitted, there is simply no teaching in Ma of modules 802 and 804 providing quality of service for upstream packet flows. In the Response to Arguments section, the Office Action stated that lines 44+ of Col. 11 of Ma "explicitly mentioned" QoS processing. However, as indicated in our previous Response, Ma only discloses that delayed sensitive packets are fully processed, wherein provision of quality of service is part of the full processing. There is no teaching or suggestion in the cited section of Ma that the full processing is performed in modules 802 and 804 as alleged by the Office Action. In fact, Col. 14 lines 35+ of Ma suggests that the full processing is performed in phase II, i.e., in blocks 808 and 810. Therefore, Ma suggests that when a delay sensitive packet is received, the packet is classified and decapsulated by modules 802 and 804 and immediately processed by modules 808 and 810 instead of being stored in the intermediate structure for later processing.

Claims 1, 19 and 29, in part, also recite the downstream flow module for wrapping outgoing packets, wherein the downstream flow module determines whether or not to

wrap outgoing packets with control information. There is simply no teaching or suggestion in Ma that the downstream flow module determines whether or not to wrap outgoing packets with control information.

Claim 19, in part, recites that the bridging and routing module includes at least memory means for receiving a packet pointer for a packet selected from one of a plurality of sources. Applicant submits that, as indicated in the following rejection, there is no teaching or suggestion in Ma of a bridging and routing module that includes at least memory means for receiving a packet pointer for a packet selected from one of a plurality of sources as recited in claims 19. Based on the deficiencies outlined above, Applicant respectfully asserts that the rejection under 35 U.S.C. §103(a) should be withdrawn because Ma fails to teach or suggest each feature of claims 1, 19 and 29 and hence, dependent claims 2-8, 14, 20, 31 and 32 thereon.

Claims 19 and 20 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,618,386 Liu. The Office Action indicated that although Ma does not teach a memory means for receiving a packet pointer for a packet selected from one of a plurality of sources, the combination of the teaching of Ma and Liu teach all elements recited in claims 19 and 20. The rejection is traversed as being based on references that neither teach nor suggest the novel combination of features clearly recited in independent claim 19.

Claim 19, upon which claims 20 depends, has been outlined above. As will be discussed below, the cited prior art reference of Liu fails to disclose or suggest the elements of claims 19 and 20.

Liu discloses a computer system that hosts a cable modem that may be used to send and receive messages over the Internet using a cable network managed by a cable operator. See at least the Abstract. Applicant submits that Liu fails to disclose or suggest the claimed features in each of claims 19 and 20. Claim 19, in part, recites a bridging and routing module in communication with the at least one flow module and the at least one memory, the bridging and routing module performs bridging of packets to a downstream flow module and routes the packets to and from a bus wherein the bridging and routing module includes at least memory means for receiving a packet pointer for a packet selected from one of a plurality of sources and wherein the downstream flow module determines whether or not to wrap outgoing packets with control information. There is no teaching or suggestion in Liu of the downstream flow module determining whether or not to wrap outgoing packets with control information. Therefore, Applicant respectfully asserts that the rejection under 35 U.S.C. §103(a) should be withdrawn because neither Ma nor Liu, whether taken singly or combined teaches or suggest each feature of claim 19 and hence, dependent claim 20 thereon.

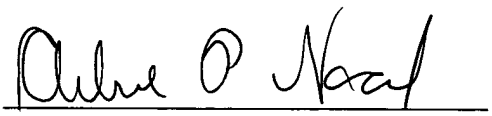
As noted previously, claims 1-39 recite subject matter which is neither disclosed nor suggested in the prior art references cited in the Office Action. It is therefore

respectfully requested that all of claims 1-39 be allowed and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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